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Fire Control
Fire Prevention
Research
Development
Improvements

STATE
OF
CALIFORNIA

Edmund G. Brown - Governor

FOREST FIRE REPORT
1959
DIVISION OF FORESTRY

F. H. Raymond - State Forester

DEPARTMENT
OF
NATURAL RESOURCES

DeWitt Nelson - Director

Cooperation
Personnel
Finances
Planning
Communications

CALIFORNIA DIVISION OF FORESTRY

1959 FOREST FIRE SEASON

1. CHARACTER AND EXTENT OF THE FIRE SEASON

On a general statewide basis the 1959 fire season was crucially dry, abnormally windy and of record breaking duration. An unusually dry winter period (1958-1959) followed by an aggregate of above normal temperatures and northerly winds in March and April, created an early drying of ground surfaces and fuels. In fact, April was one of the warmest Aprils on record in Central California. Except for two brief periods of favorable fire weather, this early pattern of adverse weather and high fire hazard prevailed until the fire season officially ended on December 24th. The first major relief in the weather and hazardous conditions occurred during the latter half of August at which time a general cooling settled over almost the entire State. The second relief came about mid-September when a winter type storm moved into California from the Northwest bringing scattered showers in some areas of the State and heavy rainfall in other sections. According to the U. S. Weather Bureau it was the second wettest September on record and the wettest since 1904. (It was reported that more than 12 inches were recorded in the Santa Cruz mountains.) With these heavy rains the end of what already felt like a long fire season seemed very near at hand. Then, suddenly the weather pattern shifted and the benefit of the rainfall was soon lost by a ten day period of Northerly winds. Following the mid-September rain and strong winds the weather pattern remained unseasonably warm and relatively dry until the 23rd of December. Not in all areas, but as an over-all statewide pattern, the year ended as the driest since the turn of the century, and in Southern California was one of the driest in recorded history. Normally the rainfall in Southern California averages 10 to 12 inches. This year it was less than five.

Due to this unusual drought, which dominated the State during the

Fall months, an emergency proclamation was issued by DeWitt Nelson, Director of Natural Resources. This proclamation declared that a written permit from F. H. Raymond, State Forester, would be required for the burning of inflammable materials or using explosives on forest, brush or grass covered lands after December 1st. By State law a written permit is not normally required during the December 1st to April 5th period except where local County Ordinances require permits. When the 1959 fire season was officially terminated for all six administrative areas on December 24th the emergency proclamation was withdrawn.

There were 3,167 forest fires on those Zone I and II forest-watershed lands that are directly protected by the Division of Forestry. This is the highest number on record and in comparison with the 1949-58 average of 2,218 fires reflects a substantial increase of 42.8 percent. The three previous high occurrence years during the last decade were: 3,088 fires in 1958, 2,668 in 1949, and 2,264 in 1950. During this same period the three low occurrence years were: 1,758 fires in 1956, 1,941 in 1955, and 1,986 in 1957.

Although the 1959 season generally possessed the worst potential damage possibility of any year in the Division's history, the 146,428 acres burned in Zones I and II this year, is a little ^{above} ~~below~~ that of the 1949-58 average of ^{149,771} ~~146,677~~ acres.

In response to the above facts, the 1959 fire season would be classified as one of the more hazardous of the past ten years, insofar as fire occurrence and weather are concerned. However, considering only the acreage burned the season would be regarded as average, and it would be logical to ask: "Why was there relatively low acreage burned this year in view of the very high fire occurrence?" Although it is impossible to make a detailed statistical study at this early date, preliminary figures indicate that fire incidence was a little above average for almost every month, but the larger percentage increase in comparison to the average, was during the pre-Spring

and Spring period. Early season fire occurrence ran as high as five to six times normal. This leads us to believe that conditions were such that although fires were easily ignited and fuels would burn, conditions were not yet right for the big fire catastrophes that occur in mid-Summer or late Fall after the cumulative deep drying effect of a long rainless Summer.

The following tables compare the occurrence and acreage burned during 1959 with the 1949-58 average for each of the six administrative districts:

State Direct Protection Area
Zones I and II

<u>District</u>	<u>1959</u>	<u>Occurrence</u>		<u>1959</u>	<u>Acreage Burned</u>	
		<u>1949-58</u>	<u>% of Increase</u>		<u>1949-58</u>	<u>% of Increase</u>
		<u>Average</u>	<u>or Decrease</u>		<u>Average</u>	<u>or Decrease</u>
North Coast	739	586	+ 26.1	67,562	45,245	+ 49.3
Northern	612	428	+ 43.0	29,667	21,013	+ 41.2
Sacramento	611	512	+ 19.3	8,528	16,121	- 47.1
San Joaquin	206	148	+ 39.2	13,780	12,697	+ 8.5
Central Coast	494	201	+ 145.8	13,426	23,589	- 43.1
Southern	505	343	+ 47.2	13,465	22,109	- 39.1
Statewide	3167	2218	+ 42.8	146,428	140,774	+ 4.0

Annual Forest Fire Statistics
Zone I & II Area Directly Protected
By The
California Division of Forestry

<u>Year</u>	<u>Total</u>	<u>Man-Caused</u>	<u>Total</u>	<u>Class E Fires</u>
	<u>No. Fires</u>	<u>Fires</u>	<u>Acreage Burned</u>	<u>(300 Acres or larger)</u>
1948	1,973	1,898	133,223	51
1949	2,608	2,385	132,253	80
1950	2,264	2,118	303,393	105
1951	2,159	1,858	148,360	79
1952	2,263	2,058	120,974	87
1953	2,080	1,932	125,150	58
1954	2,017	1,955	140,072	73
1955	1,941	1,801	161,510	61
1956	1,758	1,566	64,617	39
1957	1,986	1,895	124,316	70
1958	3,088	2,614	146,121	99
1959	3,167	2,982	146,428	95

A = 0 - 25
B = 25 - 10
C = 10 - 99
D = 100 - 300
E = 300 +

All Clarke McNary Lands Within California

<u>Year</u>	<u>Total No. Fires</u>	<u>Man-Caused Fires</u>	<u>Total Acreage Burned</u>	<u>Class E Fires (300 Acres or larger)</u>
1948	2,134	2,023	124,206	
1949	2,726	2,313	117,020	
1950	2,556	2,078	263,136	
1951	2,439	1,880	137,851	
1952	2,422	1,936	83,967	
1953	2,214	1,850	152,670	67
1954	1,993	1,866	104,488	62
1955	2,070	1,701	209,141	60
1956	2,127	1,607	87,868	47
1957	2,038	1,895	110,182	74
1958	2,109	2,359	163,918	82
1959	2,473	2,339	127,473	84

Summary

Due to the high fire occurrence, the length of the season, and the many periods of strong winds, the most significant aspect of the 1959 fire season is a question, namely, what would have happened if Fire Control forces had not accomplished the prompt and efficient control which they did? We believe the answer must be in that the initial attack crews, the quick follow-up forces, plus the many cooperating groups did a magnificent job in holding down the acreage burned.

On all Clarke-McNary throughout the State there were 84 fires in the 300 acres or larger class. These fires burned acreage as follows:

Forested Land	62,086 ^{59,395} acres
Non-Forest	68,176 ^{51,918} acres
Total	130,262 ^{111,313} acres

2. PROGRESS MADE IN EXTENDING PROTECTION TO NEW AREAS AND ESTABLISHMENT OF BETTER PROTECTION IN OLD AREAS

A. New Areas:

An area in the Siskiyou Ranger Unit consisting of 13,240 state and private and 1,320 Forest Service acres was transferred to State protection in 1959. The Gazelle #2 crew is temporarily occupying the buildings of

the Weed Guard Station in accordance with the terms of a special use permit. With this relocation of the Gazelle crew, the State is in a position to adequately protect these additional acres without adding any new personnel or equipment.

B. Old Areas:

One medium bulldozer-transport unit was added at the Hillcrest Forest Fire Station in the Shasta Ranger unit.

The 1959-60 fiscal year fire suppression organization is as follows:

230 Crews*	54 - #1
	38 - #2
	111 - #3
	19 - #4
	8 - #5
35 Patrolmen	
82 Lookouts (Three are manned by Lookout-Patrols)	
50 Bulldozer-Transport Units	
	(28 Large, D-7 o/e)
	(22 Medium, D-4 o/e)

*With the adoption of the 1956 Fire Plan, the designation of crews changed from 4, 9 and 13 man crews to #1, #2, #3, #4, or #5 crew. The #3, #4, and #5 crews have 2 fire trucks.

- (a) #1 Crew: 1.5 foremen; 1 driver; 3 firefighters
- (b) #2 Crew: 1.5 foremen; 1 driver; 6 firefighters; 1 cook
- (c) #3 Crew: 1.5 foremen; 2 drivers (1 yearlong; 1 seasonal); 6 firefighters; 1 cook
- (d) #4 Crew: 1.5 foremen; 2 drivers (1 yearlong; 1 seasonal); 8 firefighters; 1 cook
- (e) #5 Crew: 1.5 foremen; 2 drivers (1 yearlong; 1 seasonal); 10 firefighters; 1 cook

C. Initial Attack Air Program

The Division again conducted an experimental initial attack air program in 1959. The 1958 program although conducted extensively throughout the State left many questions unanswered regarding the appropriate place of air tankers in a balanced fire control organization. Various aircraft types were included in the 1958 program but each type was restricted, for

the most part, to one operating area. Because of the wide variance of topography and fuels in various parts of the State there were serious questions about the effectiveness of some types in other areas. \$133,000 was specifically allocated in the budget to conduct the 1959 Initial Attack Experiment. This does not include emergency funds for use of airtankers and other aircraft on fires going beyond the initial attack stage.

Specifications were prepared and contracts awarded for 7 airtankers and 6 "Dropco" (Drop Coordinating) observation aircraft. The airtankers consisted of 3 N3N biplanes with 180 gallons, 1 Twin Beechcraft with 300 gallons, 2 TBM's with 600 gallons, and 1 F7F Tigercat with 800 gallons. The 3 N3N's and 1 Twin Beech formed a movable "task force" which operated at least 6 weeks in each of three areas of the State. The others were permanently assigned to a single area for the entire fire season.

The aircraft remained on standby alert loaded and ready to respond, during the daylight hours on all hazardous days (based on predicted burning index). They were dispatched in the same manner as other fire control forces to smokes detected in predetermined areas. "Dropco" aircraft responded at the same time to coordinate air-ground action by radio. Each "Dropco" also carried a movie photographer to record as much action as possible for later evaluation. Statistical records were also prepared by ground and air observers.

Airtankers were used on 143 fires (both initial attack and follow-up) of which they were effective on 101 fires (71%), ineffective on 13 fires (9%), and not needed on 29 fires (20%). The airtankers took part in initial action on 102 of the 135 fires. In this stage they were effective on 45 of the fires, ineffective on 31 fires, and were not needed on 26 fires. They were judged effective in the later stages of 23 of the 31 fires on which they failed in the initial stages.

For the 143 fires, 380,000 gallons of Borate and 123,000 gallons of Bentonite were dropped for a total of 503,000 gallons.

D. Fire Economics

The Division continued its long range program of studying fire economics through its contract with the University of California, School of Forestry. The ultimate goal is to determine how much money should be spent for the protection of California's wild lands from fire. The economists express this goal in another way: Least cost - plus - loss. It sounds simple but is actually quite complicated with a myriad of variables involved in every step of the study.

One step toward the goal is to learn the effect of different suppression efforts (expressed in monetary terms) on a given fire situation in terms of the dollar value of damages resulting from each degree of effort. Such a study requires knowing exactly what a fire can be expected to do under a given set of conditions. Here we find we know little about the physical variables of a forest fire, although researchers are currently attempting to find some of the answers.

In lieu of the physical, or engineering, approach, the School of Forestry is therefore using a historical approach: gathering data from actual fire suppression efforts and attempting to detect a series of relationships among the many variables through the use of a statistical tool known as multiple regression analysis. Quite simply, the tool permits holding still all variables except one while studying the effect of change in that one variable.

As noted in the 1958 report, the initial plan for a multiple regression study was to obtain data in a pilot area in Sonoma county. Because there were so many variables involved, most of which could not be easily quantified, it was decided to conduct a broader, more generalized analysis for the first major calculation. Seven variables are being measured in the Division of Forestry's protection area statewide:

1. Area Burned
2. Protection Expenditure
3. Fire Weather Index
4. Fire Season length
5. Fuel Type Index
6. Protection force workload
7. Rural Population

Calculations will consider these variables in units of space (each of the Division's 30 ranger units) and time (1947-1956). Since this is an economic study, the dollar is being honored. The School of Forestry hopes to determine the effect of money spent for protection effort while considering (and holding still) the other variables indicated. If they can get good statistical results, they can estimate how changes in expenditures in the past would have affected the area burned. Thus a step along the way will have been achieved.

E. Fire Weather

(1) Cloud Nucleation for Lightning Prevention

The Division continued its program of weather modification in north-eastern California in 1959 with the objective to test the practicability of modifying cumulus cloud buildups so as to prevent or reduce the incidence of forest fires caused by lightning without appreciably changing the normal precipitation pattern in the general target area.

Again ground generators were used to produce silver iodide particles which it was hoped would reach overhead cumulus clouds in sufficient quantities to act as nuclei and modify the clouds in such a way as to reduce cloud-to-ground lightning. The fifty generators were located at twelve California Division of Forestry or U. S. Forest Service facilities where they could be operated by regular fire control

personnel. The target area was reduced from the 3,000 square miles of 1958 to about 400 square miles surrounding Eagle Lake in Lassen County. Technical direction in the field was provided full time by a meteorological statistician from the Pacific Southwest Forest and Range Experiment Station under contract to the Division of Forestry. The Experiment Station personnel also provided the analysis of data gathered during the July-September operational period.

Several continuous recording rain gauges were provided in the target area by the State Department of Water Resources.

As in 1958, the operation was randomized so that the generators were operated only about half of the days on which the Redding Weather Bureau predicted thunderstorm activity. The thunderstorm days in which the generators were not operated were used as a control to test the differences in lightning activity, precipitation, and nuclei count at cloud base between treated and untreated days. Preliminary results of the analysis showed general agreement with the results of the 1958 operation:

1. There was no significant difference in lightning activity between treated and untreated days, although the treated days showed a slight increase over untreated days.
2. There was no significant difference in precipitation between treated and untreated days, although again there was a slight increase on treated days.
3. There was no significant difference in the number of lightning fires started in the target area between treated and untreated days, although again there were a few more fires on treated days, occurring mostly from one storm.
4. There were three times as many nuclei detected at cloud base on treated days as compared to untreated days, but the absolute number of nuclei was physically too slight to alter thundercloud growth. At least 100 times as many nuclei are needed.

Despite the facts that the target area was considerably concentrated in 1959 as compared to 1958 and that the generators performed exceedingly well, the results were significant enough to convince the Division that successful modification of thunderclouds cannot be attained by ground generator methods in Lassen county. The Division is therefore investigating the possibility of using improved air-borne generators in a 1960 study. Such generators could potentially emit a sufficient quantity of silver iodide nuclei at cloud base to alter favorably the growth of thunderclouds.

(2) Fuelbreak

This long range program continues under the direction of the Pacific Southwest Forest and Range Experiment Station with the cooperation of other branches of the U. S. Forest Service, the California Division of Forestry, and the Los Angeles County Fire Department. Objectives of this program are to break up vast expanses of continuous heavy brush or other fuel into smaller, manageable units; to establish at strategic locations wide strips or blocks of light fuel or fuel of relatively low flammability; and to stabilize these more desirable fuels by critically timed control of brush reinvasion.

The Division has entered into this program both by providing funds to assist in maintaining the Experiment Station's investigative program and by using field personnel and conservation camp crews in active field projects designed to test techniques developed by the project.

Early phases of this study are aimed at methods of removing and controlling Southern California brush species, of replacing the brush with plant species known to be adaptable to Southern California soils, and of studying changes in green fuel moisture content of native plants with changes in season and site. A long range study is also aimed at developing "fire resistant" plant species. The fuel moisture studies also will have an indirect benefit in their application to the Fire Danger Rating System.

(3) Burning Index and Fire Weather

a) The Burning Index

1959 saw the second year of statewide operation of the Burning Index portion of the California Fire Danger Rating System. Early in the year all of the 1958 weather records were carefully checked and corrected preparatory to entering the data on IBM punch cards. The records for all stations collected by the Division of Forestry were then turned over to the Pacific Southwest Forest and Range Experiment Station for the actual punching along with their U. S. Forest Service records.

Partly as a result of the problems and errors discovered in the intensive check of the field records, a concentrated field training program was carried out in cooperation with the U. S. Weather Bureau during the spring period. A total of six one-day courses were presented in four of the six administrative districts. Roughly half of each session was devoted to the care and maintenance of weather instruments and the weather station enclosure. Part of the remaining time was used to cover various problems involved in entering data on the field record form in accordance with punch carding procedures. Some discussion was held on several associated forms and a proposed work sheet. The last part of the day was turned over to the Weather Bureau for a discussion of the method of preparing fire weather forecasts and their interpretation by the field user.

The punch card operations disclosed a need for some revision in the basic field weather recording form. Provision was made for coding all data and identifiers in sequential order relative to the punch card. The revised form and necessary supplemental coding instructions were multilithed and sent to the field near the beginning of the fire season.

Two sets of questionnaires were sent to the field. One of these asked for suggestions on improvement or revision of several of the additional forms utilized in the Burning Index. As a direct result of the answers, the forms

were revised and re-printed for 1959 usage. The other questionnaire, in cooperation with the U. S. Government agencies, dealt with the need for revision of the Fire Danger Rating areas, abandonment or establishment of weather stations and suggested names for each rating area. At a joint conference with federal representatives, all the suggestions and problems were analyzed and resolved in accordance with the basic principles and original formulation of the Burning Index and the climatological-fuel type basis of the Fire Danger Rating areas. Relatively few revisions in the Rating areas were made but all such revisions were eventually made on the Fire Danger Rating area maps along with the mutually agreed upon names for the areas. New prints of the maps were made and supplied to all Division of Forestry units as well as to the Federal agencies. In addition, the List of Fire Danger Rating Areas was revised and supplied to the field.

The program of building wind counters continued with a total of 58 constructed at one of the Division's Conservation camps. These instruments incorporate a revised circuit design and a 12 volt power supply which are designed to overcome certain problems found in the earlier six volt models. These instruments tally the number of anemometer contacts over extended periods of time. By referencing the total contact count against elapsed time of operation in a special table an average wind velocity figure is obtained. The average wind figure is used in computation of the daily Burning Index. In addition to the operational wind counters, two experimental instruments were constructed utilizing Swiss-made "SODECO" six volt registers. These instruments were placed in selected windy stations for testing.

In general the 1959 field operations of the Burning Index have been left to run pretty much on a local basis. Certain specific problems have been met and taken care of but the general idea has been to continue the "shake-down" process. Inspection and evaluation of records and data,

especially with respect to the previously mentioned training sessions, should now provide a better idea of what specific items concerning the Burning Index should be concentrated on prior to and during the 1960 season of operation.

b) Fire Weather

Besides the previously mentioned training sessions the program of field inspections of weather stations continued during the spring and early summer periods. Approximately 40 stations were visited and necessary suggestions made in accordance with the new station exposure standards. In addition an inspection trip was made cooperatively with the U. S. Forest Service station inspector in the Klamath National Forest.

With the cooperation of the U. S. Weather Bureau, some revision was made in the format of the fire weather forecasts issued by the San Bruno forecast center. The changes were designed to simplify and accelerate the Burning Index prediction process.

The expansion of the Division's radio system also resulted in placing the San Bruno Weather center radio transmitter on a frequency with very light usage. As a result a daily summary of weather patterns and expected weather conditions was broadcast by the fire weather forecaster in addition to the formal forecasts and was monitored by the District offices in the forecast areas. In addition some discussions were held on this radio frequency by the Fire Weather and Burning Index coordinator for the Division and the forecaster concerning specific weather features and general longer term weather trends. All of this material was developed as an aid towards a little better understanding of weather and the forecasts by the field users.

A natural extension of the availability of this additional weather information was the preparation in the Sacramento office of a daily written narrative weather summary. After some experimentation, the summary, called the "Weather Special", settled into a relatively compact form. The summary, on a statewide basis, utilized, as sources of information and data, the fire

weather forecasts from all areas of the state. The additional information and discussions from the San Burno center, a narrative summary broadcast by the Redding fire weather center on a Weather Bureau frequency, discussions with the local Sacramento general weather forecasters, and, through this last channel, access to daily analyses on the Weather Bureau teleprinter circuits from the main forecast centers in the Pacific states. Certain special items were added on occasion, such as the official Weather Bureau five-day forecasts, the official 30-day extended forecast and, upon occurrence, a collection of rainfall amounts gathered from over the state through the Division's communication system. The summary, usually one page, was prepared on "blueline" or "ditto" process and distributed to all interested and concerned Sacramento staff personnel as well as mailed to all district offices. Some further evaluation of this program will be made before its resumption in 1960.

During the fall a preliminary meeting was held among the principal fire weather forecast using agencies to discuss the development of a long range statewide fire weather forecasting plan. The basic goals of the plan will be to provide more localized forecast service, possibly through the establishment of additional forecast centers, closer liaison between the field users and the forecaster and consequent increased capacity for utilization of field weather observations in the daily forecasts. This plan is proposed to be prepared and submitted to the Weather Bureau as a joint and coordinated effort of all wildland fire control agencies in the state.

(4) Fireclimate

Several fatalities to firefighters in California in 1959 were attributable to "unusual" local winds. These tragedies again emphasized a need to know more about fire weather in general and about fireclimate in specific locations. The Division continued to contract funds to the

Pacific Southwest Forest and Range Experiment Station for fireclimate studies being conducted by the Station. The Division's field personnel also contributed actively to the study of local winds in De Luz Canyon in San Diego county. In 1959 the Experiment Station found indicators which may make it possible to predict down-slope winds occasionally occurring in that area in the early afternoon.

Of particular importance in predicting daytime down-slope winds is recognizing the "zone of change" from normal up-slope winds to the less usual down-slope winds. This zone gradually moves down a slope as downward moving air overcomes and replaces upward moving air. Within this zone of change there is extreme air turbulence which may cause a fire to change direction of spread many times and very rapidly for a period of several minutes. Firefighters located in this zone may find themselves unable to select a safe exit from the fire area and accidents may result. The solution, of course, is to be able to recognize where and when this wind change may occur and to remove personnel from dangerous areas until air flow and fire behavior have again stabilized.

3. IMPORTANT CHANGES IN PROTECTION PLANS,
ADDITION OF PERMANENT PERSONNEL, ETC.:

A. 1956 Fire Plan Revision:

No further implementation of the Fire Plan was received during 1959.

B. Training

The Division's Central Sierra and Southern California Training Centers completed two and one half years of operations opening in October each year and closing by mid-June. Six five week classes of twenty students each were processed through each center, graduating two hundred Forest Fire Truck drivers and forty Forest Fire Fighter foremen during 1959.

One half-time intermediate stenographer position was added to the staff of each center in 1959 to aid in the preparation of correspondence and course

materials. During the summer a garage salvaged from the old Pine Lodge station in the Amador Ranger Unit was moved to the Central Sierra Training Center and reconstructed to provide a fire laboratory and essential storage space for equipment and fire tools. No capital outlay funds have been provided to date for the establishment of permanent facilities for either center. Barracks and classroom space limit each class to twenty students.

The first course given to forest fire fighter foremen in 1959 was revised during the summer of 1959 and will be given to forty foremen during January and February 1960.

The Division's participation in the State specialized training program increased by 50% over 1958. All specialized training was confined to short term assignments except for one part time assignment arranged to meet a specific need for public information training for a newly assigned staff officer to Division Headquarters.

The Division's in-service training program built around the Flying Squad concept was further intensified. Most districts offered flying squad instruction by district staff members to personnel attached to field administrative units including State Forests, Conservation Camps, and Ranger Units.

A minimum course consisting of 57 hours of instruction for all seasonal fire fighters was approved and used statewide on an optional basis during the 1959 fire season. This course will become mandatory for all seasonal fire fighters in 1960.

The tabular training reporting system was placed into effect January 1, 1959. Preliminary results obtained from the first six month summary indicate the system is workable and will provide essential information for management, analysis, and control of the training program. Additional modification of instructions and increased scope were indicated to meet complete reporting needs. The following figures were extracted from the tabular summary for the period January 1 - June 30, 1959. (Reports for the

last half of the year are not complete to date.)

A total of 9619 classroom hours were spent as instructors by Division personnel with the Division responsible for the instruction. The Division utilized 269 instructor hours of instructor time furnished from outside sources with the Division acting as the sponsor of the course. Division of Forestry employees attended courses sponsored by other agencies, private industry, or academic institutions who contributed 866 hours of instructor time. In turn, Division employees acted as instructors in schools sponsored by other agencies contributing 19 hours. A total of 82,069 hours of planned group training was received by all permanent Division employees in all subject areas during the six month period. This instruction included the planned group training offered by the two training centers.

Arrangements were made with the Training Division of the State Personnel Board for Division employees to participate in the first correspondence course program offered as in-service training for State employees. The course in supervision prepared by the Board will consist of 14 lessons and will be administered over a 28 week period. The value of this course will be cooperatively evaluated during 1960.

C. Conservation Camps

Six new Conservation Camps were opened in 1959 bringing to 26 (16 w/CDC permanent, 2 summer, 2 winter, 3 w/CYA, plus 3 spike camps) the number of camps operated by the Division of Forestry in cooperation with the Departments of Corrections and Youth Authority.

Crystal Creek Camp in Shasta County and Puerta La Cruz Camp in San Diego County opened in April, Chamberlain Creek Camp on Jackson State Forest in Mendocino County opened in June, Pilot Rock Camp in San Bernardino County and Los Gatos Canyon Camp in Fresno County opened in December. Folsom Lake Camp also opened in December, as the new permanent winter quarters for the Beaver Creek Camp.

All of the camps operated with the Department of Corrections received increases in populations as facilities permitted during the year. All of the 60 man camps except Rainbow were expanded to 80 men, the 80 man camps to 100 with Puerta La Cruz increasing to 124. At the end of the year 1959, there were 1,594 inmates from Corrections and 265 Youth Authority wards assigned to Forestry Conservation Camps making a total of 1,859 men engaged in a variety of activities associated with the conservation of our natural resources.

Four new camps were under construction at the end of the year. Plum Creek in Tehama County is scheduled to open in May, Don Lugo in San Bernardino County and the new permanent 80 man Mountain Home Camp in Tulare County are to open in September and Alder in Del Norte County is to open in December, 1960.

Plans were developed during the year for the manufacture of 3 mobile camps each to house 40 men and necessary custodial and supervisory personnel. These mobile camps, to be in operation by July, 1960, will permit working crews in more isolated areas where the total work load would not support a permanent camp.

D. Personnel Changes: 1959-60

Sacramento Administration:

One Accounting Technician II has been provided in the Budgets and Accounts section to handle the increased work-load due to the Camp Expansion Program, and one Intermediate Stenographer Clerk has also been provided to work for both the Budgets and Accounts and Procurement Sections. An Administrative Assistant I was provided for the Administrative Service Section and an Associate Personnel Analyst for the Personnel Operations Section.

The Conservation Camp Section was provided with an additional Assistant Deputy State Forester, two State Forest Rangers I and one Senior

Stenographer-Clerk in order to handle the rapidly expanding Conservation Camp Program.

The Engineering Section has one Assistant Mechanical Engineer, one Junior Civil Engineer and one Junior Typist-Clerk additional in the current year.

The District Headquarters were provided with four State Forest Rangers I and fourteen Assistant Civil Engineers.

Forestry Conservation Camps were provided with twenty-seven Assistant Forestry Superintendants, Camp Conservation, one Forestry Work Project Supervisor, and forty Forestry Work Project Foremen.

The majority of positions which were added to the Division of Forestry personnel roster were required to handle the Conservation Camp Expansion Program, although some were provided as general assistance to handle the overall increased workload.

The Division fire suppression strength for the 1959-60 fiscal year compared to the 1958-59 year is as follows:

<u>Class</u>	<u>Yearlong Employees</u>	
	<u>1958-59</u>	<u>1959-60</u>
Forest Firefighter Foremen:		
(a) Crew Foremen	345	345
(b) Patrol Foremen	36	35 *
(c) Relief Dispatcher-Warehousemen	16	16
Forest Firetruck Driver	246 (78 County Contract during winter)	247 (73 County Contract during winter)
Forestry Equipment Operators:		
(a) Initial Attack Bulldozer Operators	98	98
(b) Assigned to Conservation Camp Bulldozer	16	22

* Poe Project Foreman in the Butte Ranger Unit discontinued. Contract with Pacific Gas and Electric Company terminated.

For comparative purposes with other states, the Division of Forestry top
(after four years of service) pay grades now are:

DIVISION OF FORESTRY PERSONNEL

Authorized Strength

All Functions

<u>No.</u>	<u>Title</u>	<u>Monthly Salary</u>
1	State Forester	\$ 1,250
1	Chief Deputy State Forester	1,150
11	Deputy State Forester	1,000
12	Assistant Deputy State Forester	821
1	Training Officer Grade I	782
10	State Forest Ranger Grade III	821
10	State Forest Ranger Grade II	745
35	State Forest Ranger Grade I	676
56	Associate State Forest Ranger	644
169	Assistant State Forest Ranger	613
12	Forestry Trainee (3-Step Range)	505
7	Senior Forest Technician	745
23	Forest Technician	676
21	Assistant Forest Technician	613
13	Forest Fire Dispatcher	530
1	Law Enforcement Coordinator	821
2	Supervisor of Conservation Education	745
6	Forest Fire Prevention Officer	676
3	Forestry Equipment Engineer	745
27	Forestry Work Project Supervisor	644
204	Forestry Work Project Foreman	584
396	Forest Firefighter Foreman (396 Yearlong)	530
247	Forest Firetruck Driver (3-Step Range) (247 Yearlong)	458
120	Forestry Equipment Operator (120 Yearlong)	530
1178	Forest Firefighter (Seasonal Only)	358
119	Forest Fire Lookout (Seasonal Only)	376
206	Camp Crew Cook (28 Yearlong)	395

4. FIRE EQUIPMENT AND IMPROVEMENTS

A. Equipment

1. Inventory:

During 1959 (**) the Division had in operation the following equipment:

<u>Transportation</u>		<u>Firefighting Equipment</u>		<u>Construction and Maintenance Equipment</u>	
*Sedans	142	Pumpers:		Maintainers	23
Station Wagons	29	Firetrucks FWD	175	Dump Trucks	38
Panels	18	Firetrucks Conv	237	Cement Mixers	42
Pickups	202	Pickup Pumpers	44	Compressor Trucks	2
Stakesides	171	Bulldozers:		Compressor Trailers	32
Jeeps	61	Large	56	Front End Loaders	9
*Suburbans	24	Medium	28	Miscellaneous	26
*Buses	24	Transports:			
		Large	25		
		Medium	34		
		Misc. Equipment:			
		Wheel Tractors	4		
		Discs	12		
		Small Tractors	2		
		w/plow			
		House Trailers	19		
		Various	11		
		Special Service	42		
		Miscellaneous	28		

** Up to July 1, 1960 - end of present fiscal year.

During 1959, (59-60 F.Y.) the following vehicles were received and placed in service:

		<u>*Camp Expansion</u>		<u>*Capital Outlay</u>	
51 Sedans					
29 Station Wagons					
32 Pickups		House Trailers	6	Buses	20
23 Stakesides		Suburbans	24		
12 Firetrucks FWD		Sedans	31		
2 Firetrucks Conv.		Buses	4		
8 Tractors		Mobile Units	3		
8 Transports					
5 B.D. Service Units					
11 Dump Trucks					
9 Concrete Mixers					
8 Air Compressors					
5 Pickup Pumpers					
1 Semi-Trailer					
4 Panels					
6 House Trailers*					
24 Buses					
3 Mobile Units consisting of 15 trailers each.					
Each Mobile Unit has 2 house trailers.					

2. Equipment Development:

The Division did not have funds specifically appropriated for equipment development for 1959, therefore, a formal program was not initiated. The evaluation of several projects started in previous years was carried over and will be continued until conclusions are reached.

Cooperation with equipment suppliers and contractors continued, resulting in the commercial development of a new pocket hose clamp for 1" and 1½" single jacket fire hose; conversion of a fire retardant jet mixer to permit mixing either sodium calcium borate or bentonite; and the modification of air tanker gates and sealing surfaces in such a manner that drops are cleaner and leakage reduced to a minimum.

B. Improvements

1. Structures:

There were eight major construction projects completed during the 1959 year each of which consisted of a number of separate buildings. In addition there were 26 separate building projects.

a. Complete Conservation Camps for the following:

- (1) Chamberlain Creek, Mendocino County
- (2) Crystal Creek, Shasta County
- (3) Puerta La Cruz, San Diego County
- (4) Folsom Lake, Sacramento County (Special Removable Design; 60 man capacity)

With the following building complements:

- (1) 80 man barracks with recreation room
- (2) 8 man Staff Office and barracks
- (3) 1 Kitchen and Messhall combination
- (4) 1 Equipment Storage Building
- (5) 1 Shop and Warehouse - separate or combination
- (6) 1 Gas and Oil House
- (7) 1 Dynamite Storage Vault
- (8) 2 Residences with Garages (Chamberlain and Puerta La Cruz only)

Plus site development including water and sanitation locations.

b. Ranger Unit Headquarters:

- (1) Napa Ranger Unit: St. Helena 18 man Barracks and Messhall combination, warehouse, automotive shop and transport bulldozer storage combination, 10 Bay Equipment Storage, Gas, oil and generator building.

- (2) Humboldt Ranger Unit - Fortuna: Automotive Shop and Equipment Storage Combination, residence and garage, paving and fencing, office addition.
- (3) Mendocino Ranger Unit - Howard Forest: Office Building; remodel office to residence; road paving.
- c. Forest Fire Stations: Two complete facilities at Spanish Flat, Napa County and at Rincon, San Diego County.
 - (1) 9 man barracks and messhall combination; equipment storage (5 bay and 2 bay, respectively); residence and garage at Spanish Flat.
 - (2) 9 man barracks, kitchen-messhall and 2 bay garage combination, site development at Rincon.
- d. Office Buildings - Addition
 - (1) Fort Bragg F.F.S.
- e. Barracks Building
 - (1) Latour F.F.S., 13 man
 - (2) Harts Mill F.F.S., 9 man
 - (3) Sutter Hill F.F.S., 18 man remodel
- f. Kitchen and Messhall Combination
 - (1) San Luis Obispo Ranger Hdqtrs., San Luis Obispo County
- g. Warehouse
 - (1) Siskiyou Ranger Unit Hdqtrs., Yreka
- h. Warehouse, Addition to Kitchen
 - (1) Iron Mine Conservation Camp, Placer County
- i. Equipment, 2 bay and storage
 - (1) Amador Ranger Unit Hdqtrs., Sutter Hill
 - (2) Bradley F.F.S., Monterey County (with office)
 - (3) Del Puerto F.F.S., Stanislaus County (relocation)
- j. Shop Building
 - (1) Miramonte Conservation Camp, Fresno County
- k. Warehouse, Auto Shop, equipment storage and transport-dozer storage combinations.
 - (1) Orange Ranger Unit Hdqtrs., Orange
- l. Residence and Garage
 - (1) Laytonville F.F.S., Mendocino County
 - (2) Forest Hill F.F.S., Placer County

m. Equipment Shelter, Addition

- (1) District II Hdqtrs., Redding

n. Radio Repeater Vault, 7 space

- (1) Red Mountain, Humboldt County
- (2) Bloomer Mountain, Butte County

o. Grease rack with 12 ton hoist

- (1) Tulare Ranger Unit Hdqtrs., Visalia

p. Paint Storage Building

- (1) District III Hdqtrs., Sacramento

q. Lookout cab modifications (sliding glass panels and catwalks)

- (1) Mt. Zion L.O., Amador County
- (2) Mt. Danaher L.O., El Dorado County
- (3) Sierra Vista L.O., Calaveras County
- (4) Rushing Mtn. L.O., Tuolumne County
- (5) Oregon Peak L.O., Yuba County
- (6) Pratt Mtn. L.O., Humboldt County

2. Water and Sanitation Development:

a. Cloverdale, Sonoma County, pipeline

b. Shingletown, Shasta County, well

c. Paskenta, Tehama County, well

d. Bear Valley, San Benito County, well and pipeline

e. Warner Springs, San Diego County, well deepening

f. Slack Canyon Conservation Camp, Monterey County, spray disposal

g. Corona F.F.S., Riverside County, evaporation bed disposal

3. Bridges:

The current inventory of bridges by class of construction and by District is as follows:

BRIDGE CLASS

<u>District</u>		<u>Suspension</u>	<u>Steel Beam</u>	<u>Timber Span</u>	<u>Concrete Slab</u>	<u>Log Span</u>	<u>Steel Truss</u>
I	Number of Bridges	0	1	7	1	4	0
	Total Length in Lineal Ft	0	38	212	39	111	0
II	Number of Bridges	0	7	9	0	5	6
	Total Length in Lineal Ft	0	471	191	0	161	728
III	Number of Bridges	1	4	0	7	1	4
	Total Length in Lineal Ft	270	182	0	88	15	721
IV	Number of Bridges	0	0	3	0	0	0
	Total Length in Lineal Ft	0	0	66	0	0	0
V	Number of Bridges	0	0	2	0	0	1
	Total Length in Lineal Ft	0	0	90	0	0	70
VI	Number of Bridges	0	0	1	0	0	0
	Total Length in Lineal Ft	0	0	16	0	0	0
Number		1	12	22	8	10	11
Feet		270	691	575	127	287	1519

4. Maintenance and Improvements:

Division of Forestry personnel, frequently with the aid of conservation camp inmates, accomplish a wide variety of tasks which can be included in this general category: Minor remodeling of existing structures as well as painting, re-roofing, etc., site development and landscaping, normal road and telephone line maintenance including improvements where needed and of major consequence are the many, many miles of new firebreaks which have been completed within the last year throughout the Division's area of fire protection responsibility.

5. Roads, Telephone and Power Lines:

Roads

The Division is currently analyzing information furnished by the field pertaining to the access, firebreak, water and safety section of the Fire Plan. We have corrected our previous road records to agree with the mileage of roads recently submitted by the field as 'existing'.

672.4 miles of road heretofore reported have been temporarily dropped pending review and acceptance of the roads which now appear in the "proposed" status of the new fire plan. The total miles of road upon acceptance of this section of the Fire Plan will, in all probability, then exceed last years reported total. Eleven and one-half miles of new construction are reflected in the current total below.

<u>District</u>	<u>Road (Miles)</u>
I	448.00
II	681.47
III	473.83
IV	290.50
V	372.20
VI	477.50
Total Miles, Statewide	2,743.50

Telephone Lines

The Division has gradually been converting ground lines to metallic circuits. This year's report reflects a major change of status in District III where all those lines previously reported as ground lines are now listed as metallic. A new line of 7.5 miles in length was constructed to serve the Chamberlain Conservation Camp in Mendocino County. A six pair rural distribution cable was utilized.

<u>District</u>	<u>Phone Lines (Grd)</u>	<u>Phone Lines (Metallic)</u>
I	155.0	116.5
II	252.7	394.1
III	0.0	595.8
IV	16.0	237.0
V	82.0	174.5
VI	0.0	198.2
Total Miles	505.7	1,717.1

Power Lines

No change from previous reported mileage - 13 miles

6. Land Transactions:

Title was acquired to six parcels of land involving the following facilities:

- a. Susanville Ranger Headquarters
- b. Oroville Ranger Headquarters
- c. Paskenta Forest Fire Station
- d. Los Banos Forest Fire Station
- e. Sunol Forest Fire Station
- f. Calandra Lookout

Thirteen lease transactions were concluded which either extended existing leases or provided for establishment of new leases. Division of Forestry facilities within the latter category are:

- a. Transfer Point, Butte Co.
- b. Arnold Forest Fire Station, Calaveras Co.
- c. Bailey Ridge Forest Fire Station, Calaveras Co.
- d. Big Creek Forest Fire Station, Santa Cruz Co.
- e. Los Gatos Conservation Camp, Fresno Co.
- f. Columbia Air attack base, Tuolumne Co.
- g. Ramona Air attack base, San Diego Co.

The Klamath Forest Fire Station site in Del Norte County was acquired from the Six Rivers National Forest on special use permit. The Washington Ridge Conservation Camp site in Nevada County and the Mountain Home Conservation camp site in Tulare County was also obtained under special use permit from the Tahoe National Forest and the Sequoia National Forest, respectively. The Don Lugo and Folsom Conservation Camp sites were obtained from the California Department of Corrections by transfer of control and possession.

7. Maps:

A new Placer-Nevada-Yuba map was completed during the year and placed in use. Revision of the Calaveras Ranger Unit Map to include the additional area now being protected by the Division has been nearly completed and will be shortly released to the field for use.

Many rights-of-way maps, charts, training aid drawings and miscellaneous items for meetings, conferences, etc., were produced during the year.

C. Radio

The statewide fire net and air net was put into operation on a limited basis this past year. Equipment presently on purchase and budgeted for in

the 60-61 F.Y. Budget will complete these two systems. The Division presently has on order, and hopes to have installed prior to next fire season micro-wave equipment that will give direct ties between the Sacramento office and each of its six district offices. The Division is continuing its purchase of replacement and additional mobile and portable units.

The following chart will show the number of units on hand by various types and proposed complements:

	On Hand or Order	60-61	Total	Comp.	Short
Mobile Units	1231	18	1249	1249	0
Portables - Fire Camp	32	3	35	44	9
Handie Talkies	515	62	577	916	339
Aerial Radios (Airplane Use)	76	19	95	112	17
Base Stations - Fire Suppression Sta.	175	13	188	203	15
Base Station - Ranger & Dist. Hdqts.	37	0	37	37	0
Base Stations - Conservation Camps	29	0	29	29	0
Base Stations - Lookouts	66	4	70	72	2
Mobile Relays - (Fixed)	60	2	62	62	0
Mobile Relays - (Portable)	9	4	13	13	0

5. FIRE PREVENTION

The forest fire prevention program involves so many organizations working cooperatively in local, district and statewide areas, that overlapping is the rule. However, to tie the activities as nearly as possible to the areas of state responsibility, this report is divided into two parts. Part one will deal with statistical information pertaining to on-the-ground actions and programs by Division field personnel. Part two will explain the highlights of the state-wide mass media educational forest fire prevention program. There is no intent to minimize the importance and extent of privately-sponsored programs such as The Redwood Region Conservation Council and Keep California Green Inc. The same applies to activities of County Fire Departments.

1. Division of Forestry Field Personnel Activities:

The local "Keep Green" and other fire prevention organizations, private industry, and the various protection agencies worked harmoniously together

and independently of each other in the same areas on forest fire prevention programs.

The statistics which follow are offered to indicate the concerted effort directed toward the prevention of forest fires and to show the scope of these activities by field personnel. These activities are in addition to those listed under part two of this report.

A. Newspaper Publicity - 1959

1. Made 8,432 contacts with the press which resulted in editorials, fire news, and other prevention copy.
2. Made 2,753 news releases.
3. Made 75 contacts with press which resulted in 33 drop ins and 42 42 sponsored advertisements.

B. Radio Publicity

1. Participated in 1,276 radio presentations (talks, interviews, and programs).
2. Presented material for 2,464 short announcements.

C. Visual Education

1. Distributed 1,900,000 pieces of printed material including posters, leaflets, pamphlets, stickers, etc.
2. Arranged for 465 displays in store windows, theaters, and public buildings.
3. Made 1,565 postings on Division of Forestry 4' x 8' highway right-of-way road signs.
4. Displayed 77 floats and/or equipment which were viewed by 313,000 people.
5. Made 51 exhibits at fairs which were viewed by 1,900,000.

D. Group Contacts

1. Presented 1,532 programs with and without films which were attended by 52,000 adults.
2. Presented 1,785 programs with and without films attended by 116,000 children.

E. Training.

1. Held 3,187 training programs with an attendance of 21,200.

F. Personal Contacts

1. Made 260,000 personal contacts at fair booths and equipment exhibits.
2. Made 240,000 contacts during normal work day.
3. Made 58,000 personal contacts during 37,500 man hours spent on patrol duty.

G. Permits

1. Issued 112,065 regular burning permits.
2. Issued 427 range improvement permits.

H. Inspections (Zones 1 and 2)

1. Sawmills - 826.
2. Other Mills - 126.
3. Logging Operation areas - 2,108.
4. Industrial areas (other) - 1,015.
5. Dumps (public and private) - 1,381.
6. Public areas (recreational, school, etc.) - 1,425.
7. Residential areas (farm and mountain) - 12,006.
8. Mechanical equipment (farm, logging, construction, etc.) - 3,312.

I. Hazard Reduction (Zones 1 and 2)

Rights-of-Way

1. State and county highways (disced, burned, or treated) - 425 miles.
2. State and county highways (disced, burned, or treated in cooperation with others) - 257.
3. State and county highways (disced, burned, or treated by others) 811.
4. Railroads fireproofed (cooperative) - 372 miles.

The following statistical record lists, by per cent of total of man-caused fires, locations, causal agents, and causes of forest fires occurring in the Division of Forestry's direct protection responsibility area (Zones 1 and 2):

<u>Location</u>	<u>%</u>
Roadside	29.37
Logging and Lumbering Areas	3.31
Wildlands	38.91
Dooryards	11.40
Cultivated Areas	4.43
Railroads	7.48
Dumps	2.50
Miscellaneous	2.60
	<hr/>
	100.00

Causal Agents

Rancher-Farmer	10.49
Tenant	9.50
Children	13.94
Traveler	21.80
Commercial Transporter	.61
Forest Product Worker	3.34
Construction Worker	2.25
Hunter	6.51
Fisherman	.71
Recreationist	3.18
Tramp	11.19
Railroad & Other Vehicles	11.01
Miscellaneous	14.67
Structural Agents	.80
	<hr/>
	100.00

Causes

Smoker-Matches-Tobacco	37.11
Debris Burning (non-permit)	4.37
Debris Burning - Permit Escape (Land Clearing, Incinerators, range improvement, trash burning)	12.55
Vehicle	10.91
Railroad - Mechanical	4.78
Incendiary	9.95
Logging-Slash	.58
Sawmill Burner	.90
Power Line	3.43
Campfires	2.83
Blasting, spontaneous combustion, stationary engine, welding, structural	2.54
Miscellaneous	10.05
	<hr/>
	100.00

2. Statewide Cooperative Mass Media Education Programs:

These programs in California are directed primarily toward urban, suburban, out of state visitors and other transient users of wildland areas. However, a considerable amount of time and efforts of field personnel carry the same type of program to local people, especially those in smaller cities and towns.

The State Forester and U. S. Regional Forester coordinate efforts expended in the programs through the California Fire Prevention Committee. The committee has a membership of over four hundred of the state's leaders representing business, industry, transportation, outdoor advertisers, utilities, informational services, labor, organizations, government and other cooperators. Under the premise that forest fire prevention is the responsibility of everybody, and not limited to protection agencies, members are encouraged to use their own informational facilities and to promote participation of others in allied or associated fields of endeavor.

As is customary two meetings of the committee were held early in the year. One in San Francisco and One in Los Angeles. The two meeting places is not to be construed as a division of interest between northern and southern California, since the separation is only for convenience of members desiring to attend.

Both meetings were well attended with enthusiasm for more active participation in the programs in evidence. There was active participation in the program by many new cooperators and stepped-up activity by many regulars during the year.

To service this committee, and the field personnel for the protection agencies, the Division produced in excess of seven million pieces of printed materials in addition to the more than one million pieces of CFFP (Smokey Bear) items. It is impossible to estimate the amount of printed and other materials produced and distributed by committee members, but it would be an impressive contribution.

The Division continued with its television and motion picture theater program. Three one-minute TV spots, several shorter spots, and a half-hour film for television and educational uses were produced and distributed.

Three trailers were produced and distributed to the motion picture theaters.

Suggested radio spots were distributed weekly to all radio stations from two central points in addition to those supplied locally by field personnel, and cooperators.

Ten portable fair exhibits were in use during the year at County, District Fairs and at the State Fair.

6. LAW ENFORCEMENT

The following statistical report indicates action taken by the Division in law enforcement. These actions resulted after investigation of circumstances concerning each fire. No attempt has been made here to segregate actions as to zones, therefore, this report covers Zones 1, 2, and 3:

Criminal Cases Initiated	220
Criminal Convictions	169
Civil Cases Initiated	603
Civil Cases Collected	104
Civil Cases Dismissed	408
Civil Cases Pending	1,225

The following table is presented for comparison with the past six years:

<u>Year</u>	<u>Criminal Cases</u>	<u>Civil Cases</u>
1952	147	114
1953	163	91
1954	153	78
1955	109	68
1956	91	130
1957	165	205
1958	245	337
1959	220	603

7. INCREASES IN APPROPRIATIONS

<u>1958-59 Expenditures</u>	<u>Estimated 1958-59</u>	<u>Actual 1958-59</u>		<u>Change</u>
Support	\$ 15,489,975	\$ 15,284,615	-	\$ 205,360
Other Current Expenditures	3,158,086	3,258,917	+	100,831
Total	\$ 18,648,061	\$ 18,543,532	-	\$ 104,529
Capital Outlay	\$ 2,982,356	\$ 1,521,331	-	\$ 1,461,025

<u>1959-60 Budget</u>	<u>Actual 1958-59</u>	<u>Estimated 1959-60</u>		<u>Change</u>
Support	\$ 15,284,615	\$ 18,109,371	+	\$ 2,824,756
Other Current Expenditures	<u>3,258,917</u>	<u>3,487,293</u>	+	<u>228,376</u>
Total	\$ 18,543,532	\$ 21,596,664	+	\$ 3,053,132
Capital Outlay	\$ 1,521,331	\$ 6,058,113	+	\$ 4,536,782

Support:

1958-59

Actual Salaries and Wages were \$14,323 less than the estimated amount.

Over-expenditures in Field Services and Conservation Camps functions were offset by savings in other functions, with an overall savings of .1%.

Actual Operating Expenses were less than the estimated amount by \$108,037, a savings of .3%.

Actual Equipment Expenditures exceeded the estimated by \$6,767, or .7%.

This was due to the purchase of equipment for fire protection at Squaw Valley in accordance with our agreement with the Olympic Games Committee. These expenditures are to be reimbursed.

Reimbursements were \$128,193 greater than anticipated. This increase is accounted for in the greater part by \$49,086 unanticipated reimbursement from the California Olympic Commission and \$62,049 from appropriations for Salaries and Wages for construction. Reimbursement from Beaches and Parks was greater than anticipated for inmate labor on park projects.

1959-60

Estimated Salaries and Wages exceed the actual amount spent in 1958-59 by \$1,434,424, or an increase of 12% . The greatest increase is in the Conservation Camp program, but all functions have increased expenditures anticipated.

Estimated Operating Expenses exceed the total amount spent in 1958-59 by \$1,028,977, or an increase of 20%, with increases anticipated in all functions.

Estimated Equipment expenses are \$444,235 greater than the previous year's actual expenses, or an increase of 33%. The greatest increase is anticipated

in the Administration function, in order to purchase radio equipment to utilize matching Federal funds.

Reimbursements are expected to increase by \$404,734, which is 25%. The increase is composed for the most part of an anticipated Federal reimbursement for radio purchases.

The total estimated increase for Support in 1959-60 over 1958-59 is \$2,824,756.

Other Current Expenses:

1958-59

Actual expenditures were \$100,831 greater than anticipated for Other Current Expenses. Savings in the White Pine Blister Rust and Research Programs were offset by large expenditures for Emergency Fire Suppression 1959-60.

Other Current Expenses estimated for 1959-60 are \$228,376 higher than actual expenditures for the previous year. The increase is principally in U. S. Forest Service and Emergency Fire Suppression and Detection.

Capital Outlay and Savings:

The increase in estimated expenditures for 1959-60 is due to the expanded Conservation Camp program.

8. LEGISLATION

No new legislation was enacted affecting the fire control operations of the Division of Forestry.

9. PROGRESS MADE IN MEETING FIRE PROTECTION STANDARDS AND OBJECTIVES

Notwithstanding the long, hazardous fire season noted in an earlier section of this report, it is notable that incidence of forest fires on the 19.8 million acres of Clarke-McNary lands in the state moved only four percent above the prior ten year (1949-58) average of 2,369 fires, and that acreage burned decreased eleven percent below the same ten year average of 143,024 acres. The result of this dual movement dropped the average size of all fires during the 1959 season eight acres below the prior ten year average of sixty acres

per fire, to fifty-two acres, and the percentage of area burned from the prior ten year average of .72 to .64.

Considering the eleven year (1949-59 Inc.) period as a whole, it is statistically demonstrable that there has been a steady decline, or downward trend in the number of all fires of an average of five fires per year, a parallel decline in acreage burned of an average of almost 2,000 acres per year, a consequent decrease in the average size of fires averaging .4 of an acre per fire per year, and only a small increase of three man caused fires per year during the eleven year period.

Another view of progress made in meeting fire protection standards and objectives during 1959 is shown in the following table which breaks the ten year period (1950-59 inclusive) into two five year periods, with the 1959 season shown separately:

California Clarke-McNary Lands

<u>Total Fires</u>	<u>Acres Burned</u>	<u>Acres per Fire</u>	<u>Annual Average % of C.M. Lands Burned</u>
<u>1950-54 Average</u>			
2,325	148,422	64	.75
<u>1955-59 Average</u>			
2,380	136,995	58	.69
<u>1959</u>			
2,473	127,473	52	.64

10. COOPERATIVE AGREEMENTS FOR PROTECTION OF STATE AND PRIVATE LANDS

1. Clarke-McNary Land Protection:

The State Forester contracts, by cooperative agreements, for the protection of Clarke-McNary lands with the U. S. Forest Service and the six contract counties of Kern, Los Angeles, Marin, San Mateo, Santa Barbara, and Ventura, as follows:

C-M Lands Protected by the State	12,945,787
C-M Lands Protected by the U.S. Forest Service	5,245,649
C-M Lands Protected by the Contract Counties	<u>1,618,555</u>
Total	19,809,991

2. Federal Lands Protected by the State:

<u>Agency</u>	<u>Area-Acres</u>	<u>Method of Payment to State</u>
Bureau of Land Management		
Unappropriated Public Domain:		
Zone 1	1,184,778	23.6¢/acre/year
Zone 2	509,597	23.6¢/acre/year
Other	330,000	None
Grazing Lands Zones 1, 2 and 3	690,000	Fire Cost Reimbursement
U. S. Forest Service	383,523	
Bureau of Indian Affairs	266,967	Fire Cost Reimbursement
Other Government	<u>225,000</u>	None
Total	3,592,865	

3. Total Land Area Directly Protected by State:

- * Zone I and II 28,561,414 Acres
- ** Zone III (24 Counties) 6,079,118 Acres
- * All State, private and intermingled federal lands, which are directly protected by the State and are primary watershed or timber lands with contiguous secondary watershed and grazing lands. (12,945,787 acres are Clarke-McNary)
- ** Rural, agricultural, grazing and wildlands not qualifying as State responsibility but which are protected by the State on an actual presuppression cost basis reimbursed by the county concerned. Each county buys protection desired.

11. NUMBER OF FOREST FIRE FATALITIES

The following fatalities were directly attributable to fire assignments:

1. San Luis Obispo Ranger Unit - Forest Firefighter Foreman
2. El Dorado Ranger Unit - Forest Firefighter
3. Riverside Ranger Unit - Forest Firetruck Driver
4. San Bernardino Ranger Unit - Pilot of airtanker

5 & 6. Tuolumne Ranger Unit - Pilot and passenger hired to make supply drop on a going fire.

7. San Diego Ranger Unit - C.D.C. inmate

12. NATURE AND EXTENT OF MILITARY COOPERATION

The Division of Forestry received the following assistance from the Military forces during 1959.

1. In Zone I, on 4 fires, 2,450 man hours were expended.
2. In Zone II, on 17 fires, 1,612 man hours were expended.
3. In Zone III, on 13 fires, 138 man hours were expended.